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Addressing the "Risk Environment" for Injection Drug Users: The Mysterious Case of the Missing Cop

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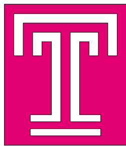

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Introduction

In many places in the world, injection drug users (IDUs) are at a heightened risk of tuberculosis (TB), HIV, hepatitis C virus (HCV), hepatitis B virus, (HBV), and other sexually transmitted infections, and face a significant risk of fatal overdose (Sporer 2003; UNAIDS 2002). Despite a growing awareness in public health of the need to address risk-determining factors in the social and physical environment, investigators seeking to unravel causes and cures for bloodborne disease among IDUs continue to turn to the usual suspects: individual risk factors and educational or behavioral interventions. While acknowledging the importance of a comprehensive approach to IDUs' health, including behavioral interventions and access to drug treatment (Academy for Educational Development 2000), we argue that the available evidence points to a promising new target: the criminal justice system . From the laws on the books, through police practices on the streets, through the operation of courts, to the conditions of prisons and jail, the criminal justice system contributes significantly to the shape of everyday life among IDUs living at or beyond the margins of legality. In this paper, we argue that greater attention to and work with law enforcement should be an important public health priority. After describing the ecological approach that comprises the framework of this paper, we will review the evidence that law and law enforcement practices are influencing the spread of communicable disease among IDUs, and then discuss the implications of this for public health research and intervention.

An Ecological Approach to Public Health and the Law

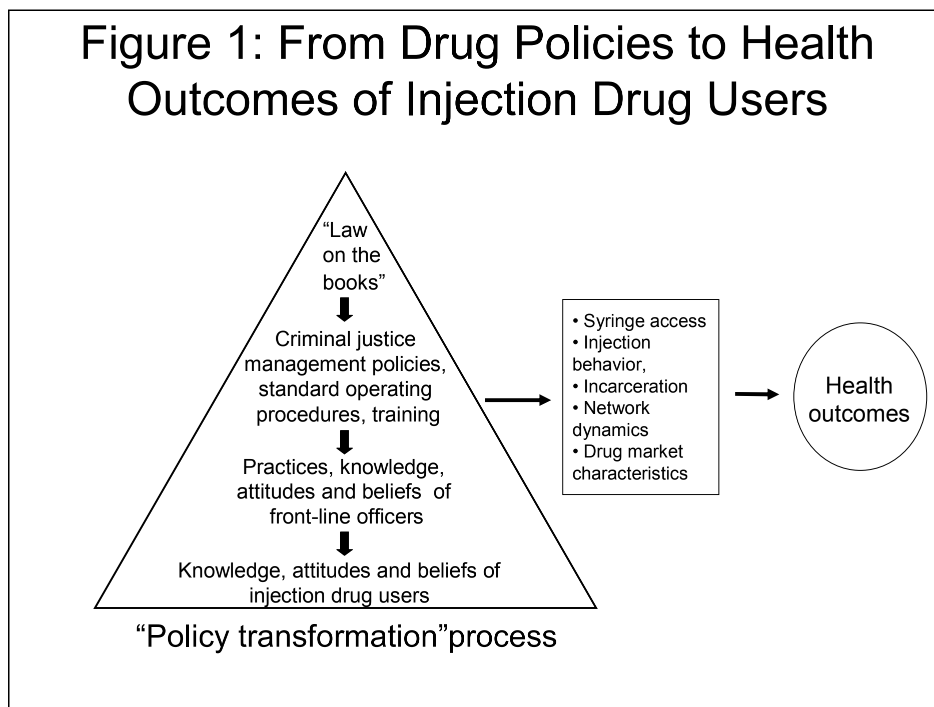
An enduring strain of thinking in epidemiology and public health ascribes to the social and physical environment a crucial role in determining a population's level and distribution of health (Lisa Berkman and I. Kawachi 2000; Oppenheimer, Bayer, and Colgrove 2002; Rosen 1993). Currently, this is referred to variously as "eco-epidemiology,"(Susser and Susser 1996) "social epidemiology," (Lisa Berkman and Ichiro

Kawachi 2000) "ecosocial theory" (Krieger 2000) or a "fundamental social causes" approach,(Link and Phelan 1995). In this paper, we will refer to it generically as an *ecological approach*. An ecological approach focuses on how social, political, and economic factors as well as characteristics of the physical environment interact with personal characteristics to determine health. Such an approach is at once "big," in that it identifies pervasive characteristics of social ordering (such as inequality (Kawachi 2000)), functioning (such as collective efficacy (Sampson and Morenoff 2000)), or cohesiveness (Putnam 2000)) that are linked to distributions of health, and particular or contextual, in its attempt to understand how characteristics of the social and physical environment are operationalized or "reproduced" in daily life (Link and Phelan 2002; Marks, Burris, and Peterman 1999; Marmot 2000; Wilkinson 1999).

To posit that health has determinants in the social and physical environment is to suggest that interventions can promote public health by changing the environment. Such ecologially-oriented efforts are now frequently referred to as "structural interventions" (Sumartojo 2000) and have been defined as "interventions that work by altering the context within which health is produced and reproduced" (Blankenship, Bray, and Merson 2000). Widely accepted elsewhere, this approach has been slower to penetrate public health practice in the United States, where the dominant intervention model remains helping individuals cope with dangerous environments by changing their attitudes and behaviors. This dominant model fails to consider how environmental factors may influence attitudes and behavior or how certain behaviors may be, in part, responses to dangerous environmental conditions.

Law can be seen as an ecological cause of risk and a medium of structural intervention to reduce risk. As a causal factor, law contributes to the construction of ecological determinants, and also operates as a mechanism through which ecological characteristics operate to produce health outcomes (Burris, Kawachi, and Sarat 2002).For example, laws prohibiting the possession or distribution of certain drugs can

have powerful effects on a society over time. In the United States, drug law has contributed to high, racially disparate rates of incarceration, swelled prison budgets, influenced conceptions of the proper balance between individual rights and state power, and conceivably (through the disenfranchisment of drug felons) changed the course of elections (Brownsberger 2000; Tonry 1995; Uggen and Manza 2002) Likewise, the daily interactions of law enforcement agents and IDUs in particular places are a mechanism through which ecological conditions are transformed into risks and outcomes. Law is also a prime potential mode of structural intervention, for it sets broad and effective rules of behavior. Both new and well-established public health interventions rely on law as a means of structuring an environment in healthy ways (Gostin 2000). For example, a law requiring customers in brothels to use condoms changes the context in which sex workers and clients negotiate safe sex (Albert et al. 1995; Sumartojo 2000). Food safety laws, or regulations requiring passive restraints in autombiles, create markets in which safety is not primarily a matter of consumer choice.



Law, however, must be seen as a complex phenomenon in its own right (Burris 2002). "Law" can be understood to include not only the rules as they are to be found "on the books" in statutes, regulations and court decisions, but also in the institutions and practices through which these laws are implemented "on the streets" (Black 1976), and indeed in the understanding of the rules and the system in the minds of people in the population (Ewick and Silbey 1998). Law, then, consists of four distinct components, which are illustrated in the simple heuristic in Figure 1. The "law on the books" includes the formal, written, legal rules -- statutes, constitutions and regulations -- as well as court decisions interpreting the law. The boundaries of this formal body of law may vary somewhat from place to place (in China, for example, sociolegal scholars treat speeches and rules of the Communist Party as the equivalent of formal law), but by and large this domain is straightforward to delineate. In the context of criminal law, law on the books broadly defines the roster of criminal acts, and sets the mission and powers of law enforcement agencies.

Law on the books is only part of the picture. Implementation research has long demonstrated that the actual application of law is subject to many institutional, individual and environmental factors, which form a gap between law as written and law as actually applied (Bardach 1977). So significant is the difference that the implementation of laws has been called a "policy transformation" process (Percy 1989). Policy implementation begins with the management tools of the implementing agencies – training, work rules, policies and standard operating procedures – but extends through the practices, knowledge, attitudes and beliefs of the line personnel who are expected to enforce the law. In Figure 1, we also include the knowledge, attitudes and beliefs of regulated parties, whose understanding of and reaction to the law and the way it is enforced influences its effectiveness.

In the remainder of this paper, we apply this model to understand how law influences the health of IDUs. It is important to note that in doing so, we are accepting as *given* a prohibitionist drug policy – i.e.,

the enforcement of criminal laws prohibiting drug use or possession. An ecological approach to the health of IDUs, and a structural approach to interventions, invites consideration of more upstream questions, such as ecological elements that may be influencing both what laws are enacted and how they are implemented. Why drug use is seen substantially as a matter for criminal control in the first place, and what forces shape attitudes towards drug use and drug users are complex questions. We will address them in a limited way at the end of this paper, but the paper proceeds on the premise that there are meaningful steps to be taken within the current approach to drug control that will alter the risk environment for IDUs.

HIV and Hepatitis Risk Among IDUs: Reviewing the Evidence

There is considerable evidence that IDUs are at elevated risk of communicable disease, and in many places injection drug use contributes significantly to the spread of these diseases (UNAIDS 2002). It is estimated that one-third of AIDS cases (Academy for Educational Development 2000), at least ten percent of HBV cases (Goldstein et al. 2002), and 68 percent of new HCV infections in the United States are injection-related (Alter 2002). Injection drug use is also the main mode of HIV transmission in the countries of Eastern Europe and Central Asia, where 60% of all reported HIV cases are among injecting drug users (European Monitoring Centre for the Epidemiological Monitoring of AIDS 2002); and in several countries, IDUs contribute over 90% of reported HIV cases (Rhodes, Stimson, Crofts et al. 1999). In China and Southeast Asia, injection drug use is a major driver of the rapid spread of HIV and HCV (Kaufman and Jing 2002; UNAIDS 2002; Zhang et al. 2002). By the early 1990s, HIV prevalence in Brazlian IDUs had reached 50-60% in Santos and 25% in Rio (Bastos et al. 1999). Although injection drug use is not the primary mode of HIV transmission in the US, it accounts for one-fourth of all cumulative AIDS cases overall (CDC 2002, Table 5) and 37 percent of cumulative AIDS cases in African American men (CDC 2002, Table 22). Among women, it represents an even larger share of AIDS cases (CDC 2002, Tables 5 and 23).

Individual Risk Behaviors and Related Interventions

Considerable public health research has been devoted to identifying the individual risk factors that make IDUs susceptible to particular diseases, and developing strategies to help individuals cope with or modify their own risks (Latkin et al. 1996; McCoy et al. 1998; Neaigus et al. 2001; Needle et al. 1998; Strathdee et al. 1997; Thorpe et al. 2001). Identified risk factors include "sharing" (serial reuse) of syringes, cotton filters, water (for dissolving drug powder), or "cookers" (bottle caps or similar vessels used to prepare an injectable solution); using a common syringe to divide a dose of drug solution among multiple users; not being in drug treatment; and injecting at "shooting galleries" where IDUs congregate to consume drugs and in other semi-public areas (such as rooftops, abandoned buildings, parked cars and so on) (Celentano et al. 1991; Friedman et al. 1995; Jose et al. 1993; Latkin et al. 1996; Needle et al. 1998). Intervention strategies targeted to these individual risk factors have depended heavily on education, outreach, counseling and substance abuse treatment to modify individual behavior (Academy for Educational Development 2000; Coyle, Needle, and Normand 1998; McCoy et al. 1998).

Ecological Approaches to Risk and Structural Interventions

With experience and the passage of time, it has become evident that individual risk factors, and efforts to help individual IDUs change their behavior, are insufficient. IDUs exist in complex "risk environments" (Rhodes 2002) in which individual risk behaviors are shaped by ecological factors including limited availability of resources (such as clean syringes, hygienic places to inject, or drug treatment), societal norms that stigmatize drug users, the structure of social networks (Galea and Vlahov 2002; Latkin et al. 2003; Sherman and Latkin 2002), low levels of social capital and social and economic power among drug users, and a legal and policy environment that focuses on social control and punishment of drug users. An ecological approach to IDU health, and structural interventions targeted to these environmental

factors, are thus important elements of an effective response to HIV and other diseases among IDUs (Des Jarlais 2000b; Friedman et al. 1997). In particular, in this paper, we focus on evidence that demonstrates that criminal law and associated law enforcement practices comprise significant ecological factors structuring risk and behavior among IDUs. Moreover, laws and legal practices are among the more readily identifiable and, in some settings, malleable ecological risk factors influencing IDUs, an important consideration in places where the epidemic is growing rapidly and resources for interventions are limited.

Drug Law, Police Practice and their Effects on IDU Risk and Attitudes

The non-therapeutic production, distribution and possession of drugs is now treated as a criminal matter in most countries of the world, though the nature and intensity of control measures has varied. The fingerprints of the criminal justice system are everywhere to be found in the behavior of IDUs, who live furtively in "microcontexts" of police surveillance, crime, mistrust, and violence. (Bourgois 1998; Clatts et al. 1998; Grund et al. 1992). In the United States, where "laws on the books" commonly prohibit possession of drug paraphernalia, a substantial body of ethnographic and quantitative research indicates that IDUs are unwilling to carry syringes in the US for fear of being stopped by the police (Bluthenthal, Lorvick et al. 1999; Bourgois 1998; Clatts et al. 1998; Feldman and Biernacki 1988; Gleghorn et al. 1995; Grund et al. 1995; Koester 1994; Waldorf, Reinarman, and Murphy 1990; Zule 1992). These self-reported data are to some degree validated by studies using other outcome measures. In their report of needle use practices in Seattle, Washington, where needle purchase is legal, Calsyn and colleagues observed lower rates of needle sharing compared to regions where needle purchase and possession was illegal (Calsyn et al. 1991). Bluthenthal and colleagues found that IDUs concerned about arrest while carrying needles were over 1.5 times more likely to report sharing (Bluthenthal, Lorvick et al. 1999). Metzger's New Jersey and Pennsylvania respondents who shared reported more arrests and legal difficulties (Metzger et al. 1991).

Laws limiting access to syringes are significantly associated with high prices for syringes obtained from street sellers, which in turn limits the ability of IDUs to purchase sufficient syringes to use one new syringe for every injection (the public health ideal). In a survey of 42 Syringe Exchange Programs (SEPs) in 35 cities in 18 states, street prices of syringes rose steadily and substantially according to whether there was no law, an unenforced law or an enforced law against possession by IDUs (Rich and Foisie 2000). Friedman and colleagues found that prescription laws in the United States were associated with a higher incidence and prevalence of HIV infection (Friedman, Perlis, and Des Jarlais 2001).

Police practices may be, to some extent, independent of the written law concerning syringe possession and drug use. Police generally have the discretion and the dexterity to deploy a wide variety of criminal and public order laws to accomplish their street control and public safety mission, and research indicates that they do so in the area of drug use (Lovell 2002; Maher and Dixon 1999). In Russia, where syringe possession is not a crime (Hartsock 1995), possessing a syringe marks an individual as an IDU and exposes him or her to punishment on other grounds. Police may confiscate syringes; they may arrest drug users and require them to be screened and, if positive, registered as habitual users at a government narcological institution or confined for treatment. Possession of even small amounts of drug can lead to criminal charges, and the threat of any of these measures may be used to extort bribes (Bidordinova 2002). This is borne out by Grund's study, in which 40% of IDUs surveyed in five Russian cities said that they did not routinely carry injection equipment, in part to avoid attracting attention from the police (Grund 2001). Investigations by NGOs have repeatedly identified police interactions with IDUs as potentially worsening the risks of HIV transmission (Human Rights Watch 2003a, 2003b, 2003c, 2003d; International Harm Reduction Development Program 2003).

Such direct behavioral influence is not, however, the only way in which laws or law enforcement practices may influence HIV risk. A high prevalence of incarceration as a punishment for drug use can make prisons key sites for the transmission of HIV, TB and other diseases, because of over-crowding, poor nutrition, limited access to health care, continued drug use and unsafe injecting practices, unprotected sex and tattooing (Buavirat et al. 2003; Galea and Vlahov 2002; Hammett, Harmon, and Rhodes 2002). TB outbreaks and HIV risk behavior and infection have been reported even in countries with substantial budgets to invest in hygienic prison conditions (Bergmire-Sweat et al. 1996; Rotily et al. 2001; Taylor et al. 1995). In Russia and Ukraine, significant outbreaks of HIV and multi-drug-resistant TB have been reported in prisons (Grange and Zumla 2002; Holden 1999; Stern 2001; Trebucq 1999), making imprisonment itself an important risk factor for disease. In a particularly dramatic example, 284 cases of HIV were discovered at a Lithuanian prison, a number that was greater than the total number of HIV infections previously recorded by national health authorities (UNAIDS and World Health Organization 2002). In Thailand dramatic increases in HIV prevalence in the late 1980s are thought to have been fuelled by transmission related to IDUs moving in and out of prisons (Jurgens 2001). Such statistics emphasize the importance not just of hygienic prison conditions, but of the prior policies and practices among police, prosecutors and judges that determine the flow of people into the prison system.

Law enforcement practices are also of interest in the context of increasing attention to the important role of network dynamics in the spread of HIV among IDUs (Friedman and Aral 2001; Kottiri et al. 2002; Potterat, Rothenberg, and Muth 1999; Rothenberg et al. 2000; Rothenberg et al. 1998). Networks of injectors who only share injection equipment with others in their network may in theory be retarding factors in the spread of HIV, even if other networks become saturated with the virus. However, high arrest and incarceration rates, or other police practices that influence injection partnering, could be actively causing

the disruption of stable networks and the reconstitution of seromixed networks that facilitate HIV spread (Friedman et al. 2000; Rhodes et al. 2002). Differences in the intensity of police activity and the attendant disruption of networks could be a factor in substantial differences in HIV rates exhibited within and across nations with significant amounts of injection drug use.

Drug laws and enforcement practices also may reshape drug markets and drug use patterns, exposing new populations to injecting drug use and consequently HIV and other blood-borne viruses. In the late 1980s in some countries of Southeast Asia, for example, vigorous enforcement of laws against the use of smokeable opium led to increased injection of heroin (Costigan, Crofts, and G 2003).

Criminal laws and enforcement practices can also influence IDU risk by affecting the ability of public health agents to effectively deliver prevention services. It goes without saying that laws that explicitly prohibit interventions such as syringe exchange programs (SEPs) or methadone treatment act as "barriers" to those interventions, but the necessity to address law in practice is less appreciated. In the US, law enforcement activity has been found to hamper both illegal and legal SEPs (Bluthenthal 1998; Bluthenthal et al. 1998; Paone et al. 1999). Although few studies have assessed the impact of police pressure on SEP activities, some studies have reported that arrests of staff or attendees have reduced SEP attendance, limited their expansion, and may have increased the length of time contaminated needles circulated on the streets (Bluthenthal 1997; Davis et al. In press; Heimer et al. 1996). While data are generally lacking, anecdotal evidence supports fears that both policy and practice are hurting disease prevention efforts among IDUs in other countries as well. Syringe exchanges operate in Russia, Ukraine and Poland, but report local resistance from the authorities operating on the belief that SEPs facilitate drug use (Open Society Institute 2001; Rhodes et al. 2002).

Drug users' experiences with police practices and the law enforcement system have created "a climate of fear and uncertainty" that in turn, influences IDU risk. Maher and Dixon's ethnographic study of the drug scene in Cabramatta (Sydney), Australia documented the role of this climate of fear in promoting unhygienic use of the mouth or nose to store drug packets (increasing the risk of HBV or HCV transmission), reluctance to carry injection equipment, and pressure to consume drugs less safely (Maher and Dixon 1999). A police crack down was found to have similar results in the Melbourne area, (Aitken et al. 2002) where another study observed IDUs consciously running a higher risk of fatal overdose by selecting injection sites that were secluded from police surveillance (Dovey, Fitzgerald, and Choi 2001). In the United States, shooting galleries, sites where large numbers of drug users congregate to inject drugs, are associated with very high HIV risks. IDU use of shooting galleries has been attributed in part to fear of arrest (Celentano et al. 1991; Ouellet, Jiminez, and Johnson 1991).

Summary

The theory of the case now runs like this: the interactions of drug users with the criminal justice system may plausibly be suspected of causing a significant portion of their vulnerability to bloodborne disease; the criminal justice system should therefore also be recognized as an important target of public health research and action. Interventions among and collaborations with law enforcement are also necessary as a practical matter to ensure that public health programs aimed at marginalized populations can be authorized and successfully implemented. Law enforcement can continue in its traditional role of targeting drug supply while at the same time adopting a public health approach in preventing HIV and other communicable disease. This claim is hardly the sort of stunning revelation that ends a good mystery story, but while many in public health would accept in theory the value of a greater attention to law enforcement, identifying practical next steps has proven difficult. In the remainder of this paper, we examine some

plausible directions for research and intervention to demonstrate that, even without answers to all of the methodological or practical questions about social epidemiology and structural interventions, there is ample opportunity for immediate work.

Conducting Research on Law, Law Enforcement, and IDU Health

While there is research indicating the role of law and law enforcement in shaping IDU health, there is considerable room for additional work. In keeping with the diagram in Figure 1, this work may focus on any one of four different dimensions of law as it relates to IDUs, each of which raises a variety of different issues and suggests numerous research questions. In this section, we discuss these in greater detail.

Law on the Books

Law on the books is the starting point for analysis of how laws and their implementation affect IDU health. In the US, state and national law is readily available to legal researchers, as it is in many wealthier countries with high-functioning legal systems (Burris, Vernick et al. 2002; Burris, Welsh et al. 2002). Many countries facing HIV are not so well-off in terms of policy research capacity or infrastructure. In these countries identifying and then obtaining relevant law can be an onerous task requiring collaboration of local legal researchers; it is a task that remains to be done. There is also considerable room for more systematic research on how variations in law on the books are associated with the health risks and health behaviors of IDUs, and through this research, on identifying which aspects of the law are most significant in shaping these risks and behaviors. Some of this research may reveal that laws on the books have little impact on HIV related risk and behaviors. For example, laws requiring that HIV test results be reported to health authorities appear to have little or no direct effect on willingness to be tested (Lansky et al. 2002). In contrast, some of this research demonstrates that there may be an association between laws on the books and increased HIV risk. For example, differences in state laws between the amount of crack and the

amount of powder cocaine that will trigger sales or trafficking charges or mandatory minimums have been shown to be associated with higher rates of HIV/AIDS among African Americans (Blankenship, Mattocks, and Stolar 2003).

In researching the impact of formal law on IDU health, it is also important to pay careful attention to the question of what law is "relevant" among the huge body of rules that obtain in a modern state. It may be that the vulnerability of drug users depends less in some places on criminal laws explicitly forbidding drug behavior and more on other laws that police deploy to accomplish their mission. For example, in Russia, police officers in at least some places use public intoxication or disorderly conduct charges to arrest IDUs (Rhodes et al. 2002). Just looking at laws "about" drug use would fail to detect the key laws used in everyday police practice, or support inquiry into why certain laws are enforced in a given setting. Also relevant may be laws that create long term social or economic penalties for IDUs or their families, including exclusion from benefits programs, public housing or the franchise.

Management Policies, Procedures and Training

The first important level of implementation is the embodiment of rules in the management tools of the agencies charged with enforcing the laws. "Drug czars," mayors and police chiefs set a tone and often concrete priorities for the deployment of law enforcement resources. Police agencies issue directives to officers, create standard operating procedures, launch special initiatives of high-intensity policing and train new staff. Public prosecutors devise guidelines on charging, plea-bargaining. And so on. Data on this level of policing are rather limited. Some management factors may be collectible in the form of written policies or manuals, but many will require interviews with cooperative managers to acquire. These policies are important elements of law everywhere, but may be particularly important in localities where police agencies are less constrained by other elements of the government or the society.

Implementation of law tends to be a process of transformation precisely because law enforcement agencies and their personnel have so much discretion. Consider just two significant developments in policing over the past twenty years: racial profiling in traffic stops, and "broken windows" or "zero tolerance" policing. Targetting drivers for stops based on race was certainly not required by the law on the books, and indeed was arguably inconsistent with Constitutional norms of non-discrimination, yet in at least some police departments became standard practice. Likewise, the idea that police should concentrate on the small infractions that signalled a breakdown of community social control (famously set out under the rubric of "broken windows" by Wilson and Kelling (Wilson and Kelling 1982)) led to real changes in how law enforcement resources were deployed in cities like New York. While it may be argued that in many if not most instances the changes in police management are more rhetorical than real (Fagan and Davies 2000; Harcourt 1998), these examples suggest that external pressure and "new ideas" can influence police at the implementation level even in the absence of major changes in law on the books.

Practices, Knowledge and Attitudes of Street-Level Criminal Justice Personnel

In the area of policing, research has long shown that the implementation gap between "law on the books" and "law on the streets" exists not just between law on the books and management practices but also between management directives and street practice (Bayley and Bittner 1984; Bittner 1966; Manning 1977; Oberweis and Musheno 1999; Shearing and Ericson 1991). Police do not generally see the law as a set of instructions they must follow as much as possible to the letter, but a toolkit from which they can draw in their overall mission of keeping order (Bittner 1966; Maher and Dixon 1999). Discretion in the deployment of laws is both central and essential: central because the day-to-day work of the officer and its effect on the policed community are shaped by how he or she uses the power of the police; essential because rigid enforcement of every law as much as possible as written would quickly paralyze the officer

and the system (Holmberg 2000). There is an extensive literature documenting and seeking to understand drivers of "police culture" and its influence on the implementation of management directives and laws

In spite of the large body of work on police generally, and a growing interest in public health law, largely missing from current research is a focus on police and other criminal justice actors from a health perspective. Research cited here has shown how law and police work influences IDUs, but its focus has been on the effect rather than the cause. Research has documented how IDUs respond to police, but as yet has not focussed on the behavior of police towards IDUs or the factors that drive it. Key issues to explore include the knowledge, attitudes and beliefs of front line staff and managers concerning drug use, HIV prevention and the impact of law enforcement on IDUs; the organizational structures and incentives that influence how drug laws are enforced; and how people within the system think it could or should be changed to bring about different practices with respect to IDUs. Of course, police are not the only institutional actors of importance. The same sorts of questions can and should be asked of prosecutors, probation and parole officers, prison officials and judges. Exploratory health-oriented research has been done at the upper levels of the system, and sets a course for more work (Beyer, Crofts, and Reid 2002). Rapid assessment and response methods appear to be particularly useful in identifying local law enforcement risk factors within a time frame that allows response to be timely enough to make a difference (Rhodes, Ball et al. 1999; Rhodes et al. 2002; Rhodes, Stimson, Fitch et al. 1999). But a greater scrutiny of law enforcement officials and the drivers of their behavior is an important way for all research on the health of marginalized populations to begin to grapple with ecological approaches to intervention.

Attitudes, Knowledge and Experiences of IDUs

The final important component of law is the way the IDU experiences the rules through the practices of the law enforcement system. For the people governed by law, "law" is less a matter of formal

rules than of the street rules they actually experience in their day-to-day experiences with the enforcement system (Ewick and Silbey 1998; Tyler 1990). Ethnographic research can effectively document how perceptions of the law and experiences with police and other system agents shapes the behavior of injection drug users (Blankenship and Koester 2002; Bluthenthal, Kral et al. 1999; Bluthenthal, Lorvick et al. 1999; Bourgois 1998; Clatts et al. 1998; Koester 1994; Lovell 2002; Rhodes et al. 2002; Rhodes, Stimson, Crofts et al. 1999). Understanding how these perceptions are formed will be useful in work to change them where they have become inaccurate or maladaptive.

The study of all four levels of law is itself an essential component of the effort to study more rigorously the ultimate health effects of the system's operation. Efforts to determine relationships between laws on the books and health can be rendered much more powerful by data on the actual implementation practices of system actors and the responses of IDUs (Birkhead et al. 2002; Cotten-Oldenburg et al. 2001; S. R. Friedman et al. 2001), as well as by more accessible data on key measures of system activity, such as drug paraphernalia arrests and convictions (Case 1998). Major "non-health" interventions, such as drug courts and supply-side drug control interventions, require more extensive and rigorous evaluation in terms of their effect on IDU risk and risk behavior (Belenko 2002; Wood et al. 2003).

Developing Interventions Aimed at Laws and Law Enforcement Practices

If law, including all four of the dimensions on which we have focused, is structuring their risk environment, then targeting changes to these dimensions of the law may be as or even more effective than helping IDUs cope with the risks they create. Interventions that change law, policy or the attitudes and practices of law enforcement agents are "structural" with respect to IDUs because they alter the risk environment with which IDUs have to cope. With a necessary qualification as to the need for further

research and evaluation, it can be argued that plausible interventions are available at all four levels of the law in our schema – and beyond.

Changes in Law on the Books

Law on the books is an important structural factor for public health in part because it can usually be changed to some extent, on occasion substantially. Public health research and advocacy can be an important part of the process of guiding legal change in ways that promise to promote health. The formal law can also be changed by litigation, which in some countries affords a means through which advocates for marginalized people, or for public health generally, can have an effect even in the absence of the money or other resources necessary to effect legislative change.

Leaving aside for the moment a change as far-reaching as the abandonment of the prohibition model of drug control altogether, the list of legal changes that could predictably have an effect on IDU vulnerability to bloodborne disease includes deregulating the possession of syringes and needles (including the decriminalization of the possession of trace amounts of drug in the barrel of a used syringe so that IDUs can carry their used syringes to appropriate disposal sites without fear of arrest), and legalizing methadone and other forms of opiate replacement therapy, and minimizing regulatory barriers to their use (Burris and Ng 2001; Heimer et al. 2002). In countries that rely on high levels of incarceration in dealing with drug users, efforts to reduce imprisonment and encourage diversion to treatment would be helpful. These include diversion programs, drug courts and, in places like countries of the former Soviet Union, new rules for bail, probation and parole.

Even significant changes in the law on books may have limited street-level effects because of the policy transformation process. Changing law is useful as a means to instigate management change, but it is neither sufficient nor essential to such change. Laws can change without management or staff altering

their practices in the expected way: so for example the Bridgeport Police Department in the United States was found to continue its practice of arresting IDUs for syringe possession in spite of legislation authorizing IDU access ("Doe v. Bridgeport Police Department" 2001). Likewise, it may be possible for there to be considerable cooperation at a management level in harm reduction efforts even though the law on the books remains highly punitive. Thus in some communities in the US, syringe exchanges operate by local interpretation of laws that state level officials may believe prohibit SEPs, or without claim to legality but with the tacit support of local law enforcement officials (Burris et al. 1996).

Management and Training Changes

There is a wide range of possible management interventions to harmonize health and law enforcement. Incorporating harm reduction and disease prevention into national drug strategies, as has happened in Australia and to a limited degree in Europe (Aitken et al. 2002; European Monitoring Center for Drugs and Drug Addiction 2002), would be an important initial step. The United Kingdom has adopted a policy of encouraging the identification and treatment of drug users at every stage of the criminal justice process, including diagnosis and referral at arrest and enhanced treatment options within prison (Kothari, Marsden, and Strang 2002). Formal cooperative structures bringing together health, law enforcement and other government managers is a promising way to begin to change priorities and cultures while exchanging useful information. Such structures have been developed in the UK and Australia (Midford et al. 2002), and may be created at the local or state level in the absence of a national plan. Directives or standard operating procedures may be used to encourage implementation of harm-reducing policies in actual practice. In some Australian and American states, for example, management policies have been implemented to discourage police from making arrests at drug overdose scenes, in order not to deter help-seeking behavior (Burris, Edlin, and Norland 2001). In New York City, police managers issued orders

against arresting people for syringe possession after the passage of legislation to encourage pharmacy sale of syringes to IDUs ("Roe v. City of New York" 2002).

Better management of courts, bail systems and prisons can improve conditions even without fundamental changes in law. Drug courts and other alternatives to incarceration may be organized without changes in the overall legal framework. In many countries, at least some drug treatment is available in prisons, though very few make the most effective forms of pharmacological treatment available. Condom, syringe and bleach distribution within prisons, and better prison health care and health education may help reduce disease transmission within the system, and more effective management of health issues at release could potentially reduce the risk of overdose among newly freed prisoners. Through a consultative process, involving international and non-government organizations and government departments, the World Health Organization has produced guidelines on the control of HIV infection and AIDS in prisons. These guidelines seek to provide standards from a public health perspective for prison authorities (WHO Regional Office for Europe 2001). Beginning to make health a relevant outcome for assessing the performance of law enforcement managers could be a way to encourage more attention to these issues. Of course, both legal and policy changes must be supported by the commitment of resources. Accessible drug treatment, efficient courts, honest police and safe prisons all require funding to achieve.

Educational interventions targeting law enforcement agency managers can increase awareness of the problem, possible solutions and the relation of both problems and solutions to police concerns. Management structures that encourage interaction across government provide health and law enforcement managers an opportunity to educate each other informally, as can advocacy from outside government. The International Harm Reduction Development Program (IHRD) of the Open Society Institute has for several years organized study tours for police officers to visit sites where a public health or harm reduction

approach is integrated into policing. Once management has accepted the importance of health concerns in policing, police training becomes a prime means of fostering attitudinal and behavior change within the organization (Costigan et al. 2003). That said, policing research shows again and again the crucial importance to reform of understanding the existing norms and incentive systems within law enforcement agencies, underlining the need for formative research as a precondition to intervention.

Street Level Changes

Top down laws and management policies are levers of change, but the fulcrum is the line staff on the streets. As the discussion above has suggested, interventions will have to change how police officers and other law enforcement agents interact with marginalized people. Even if changes in law and management policies successfully addressed top-down factors that created tensions between law enforcement and health promotion, there would still be a need to deal with the bottom-up factors embodied in the knowledge, attitudes and beliefs of the police officers, attorneys, probation officers and others who apply the law day to day. In some places, one of the most problematic of these factors will be corruption (Bidordinova 2002). Policing research suggests that organizational change is possible, but requires both changes in the "rules of the game" governing staff work and changes in the how officers think of what they do (Chan, Devery, and Doran 2003). Education and police reform are both part of this cultural change. In practice, most interventions among marginalized populations in most places already entail negotiation with the local law enforcement agency and front-line staff (Costigan et al. 2003), but these "educational" interventions are not treated (i.e. documented and evaluated) as such. Health-focused research on law enforcement workers can be expected to produce data on which attitudinal interventions can be based, as well as ideas for structural changes that can provide the police with more incentives to take health into consideration in their interactions with marginalized populations.

Interventions Aimed at IDU Perceptions of and Interactions with Police

Whatever changes are made to the top three levels of the Figure 1 pyramid, successful implementation will require efforts to inform IDUs of new policies and convince them that these changes are real and can be relied upon. Consistent with HIV control strategies that have mobilized people at risk to articulate and address their own needs (Beeker, Guenther-Grey, and Raj 1998), efforts to reduce environmental risk are enhanced either by creating conditions in which IDUs themselves can undertake health research and promotion, advocate in public forums concerning the health effects of law enforcement activity, and participate in police trainings, or by working with outreach and other public health workers to identify harm reduction strategies that counter IDU behaviors that result from their fear of police (Balian 1998; Buning 1991; Ross 2002).

Paradigm Changes in Drug and Security Policy

The interventions we have canvassed so far will be subject to criticism from a variety of perspectives. Proponents of the current approach to drug control may argue that public health and harm reduction approaches to drug use weaken the normative or deterrent power of drug control laws and will ultimately hurt more than they help as the overall rate of drug use increases in response. Those who favor drug legalization may find our ambitions too limited, or suggest that it is naïve to imagine that policing practices can change significantly in the absence of more fundamental change in the laws the police are enforcing. It can be argued that ecological approaches that fall short of pursuing fundamental change in the deep social determinants they identify lack the courage of their convictions, and may in the end accomplish little more than shifting the blame for ill health from disadvantaged individuals to disadvantaged communities (Muntaner and Lynch 1999). From this view, perhaps only changes at the deepest level of

social structure—in this case, changes that would transform the punitive approach to drugs and drug use, and deal with related matters of race and class—can properly be called "structural interventions."

All these arguments are at some level unanswerable, if only because the answer depends upon assumptions and predictions about the future that cannot be tested except over time. Drug policy has deep and tangled roots in stigma, race, class and perhaps even what Don Des Jarlais has arrestingly called "euphoriphobia" (Des Jarlais 2000a). From a variety of theoretical standpoints, laws and legal institutions can be seen as tools for struggle among competing social factions, struggles whose motives and logics may be far more important to policy formation than data about and analysis of the "problem" itself (Burchell, Gordon, and Miller 1991; Gusfield 1963).

That said, the agenda we propose here deploys tried and true tools of institutional change that are capable of producing meaningful improvements in the risk environment for IDUs. Public health movements have traditionally relied on data to awaken concern about social problems and channel that concern into advocacy for political and institutional change. Epidemiological data have facilitated the enhancement of syringe access for IDUs just as they have stricter control of smoking and drunken driving. "Harm reduction" as a grass-roots social movement has achieved real success in the form of thousands of functioning programs around the world (S. Friedman et al. 2001). Needle exchanges, safe-injecting rooms, overdose-prevention campaigns and drug-treatment initiatives have helped demonstrate that the case for a public health approach to drug use is a strong one. The changes in U.S. drug control law catalyzed by public health and harm reduction arguments have been substantial even if not radical (Burris, Strathdee, and Vernick 2003) .

Our agenda also proposes that significant change can be catalyzed from within police organizations, through a process that changes the organizational mentality with respect to drug abuse.

Those who argue that policing organizations can change emphasize the importance of understanding organizational dynamics and culture (Chan et al. 2003). They point to the possibilities entailed in changing how people within police organizations understand their mission and the communities they serve (Johnston and Shearing 2003; Shearing and Ericson 1991). Studying police behavior and thinking from a public health perspective is a necessary precondition to offering salient, acceptable alternatives for adoption by police.

More broadly, a public health perspective might also loose the Gordian knot of drug policy by reframing the debate from one that contrasts prohibition with legalization to one that focuses on the nature of policing and its relationship to security. Looking beyond existing law enforcement approaches, a health perspective resonates with efforts within criminology and policing to promote innovation in the governance of security. Providing safe, well-ordered communities is an essential obligation of the state, but there may be better ways to do this. Conventional state law enforcement systems intentionally inflict harm – imprisonment, shame -- as a principal element of their operation. They are backward-looking and retributive, and are authorized to use and do sometimes deploy physical force as a means of dealing with illegal behavior (Aral, Shearing, and Burris 2002). Such systems may operate with a high degree of professionalism and legitimacy, but the fact remains that in disrupting communities with intensive drug policing, they may have multiple effects on individual and community well-being that counterbalance or even outweigh the benefits of less drug-dealing and related disorder (Fagan and Davies 2000; Iguchi et al. 2002). In particular places, or in relation to particular kinds of disorder, it may be possible to devise new security systems that draw upon different tools and ways of thinking, and free police resources to deal with matters to which coercive, retributive approaches are better suited. Interventions such as the Community Peace Project in South Africa create alternative institutions for promoting security within poor communities

(Johnston and Shearing 2003). Communities may be better able than the police to manage the quality-of-life issues of drug use, and can collaborate with law enforcement and public health entities in developing service systems that respond effectively (Sampson and Morenoff 2000).

Conclusion

Both law enforcement and public health are directed to the promotion of good health and good order in the community. We have argued that law enforcement agents are of substantial importance in the search for environmental determinants of IDU health. We have suggested a change in focus in research to address a need that has remained unmet for some years, not just with respect to IDUs but also commercial sex workers, illegal migrants and other populations living at or beyond the margins of legality. Researchers concerned with the health of marginalized populations have long recognized that laws and law enforcement practices matter to health and behavior, but for a variety of reasons have not done a great deal to directly address these factors. In a quite similar way, the recognition of the importance of structural factors in health has so far outstripped research and intervention premised on that ecological view of health. It is imperative that we deploy an ecological approach to studying law and law enforcement practices as contributing causes of HIV and targets of prevention intervention.

The significance of this change in focus is substantial. Rather than looking solely at the population at risk of HIV, such research would take seriously the notion of social causes of disease or risk environment by directing significant attention toward *other people and institutions* that structure disease risks among marginalized populations. A focus on law enforcement responds to these risk structuring factors with a research aimed at producing structural interventions – that is, interventions that try to change the environmental risks, rather than helping IDUs cope with a risk environment that is not changed. Looking away from the population immediately at risk and in the direction of others whose behavior creates risk

offers many new opportunities for prevention work.

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